

## **REMARKS**

Reconsideration and withdrawal of the rejections of the claimed invention is respectfully requested in view of the amendments, remarks and enclosures herewith, which place the application in condition for allowance.

### **I. STATUS OF CLAIMS AND FORMAL MATTERS**

Upon entry of this amendment, claims 1, 3-7, 11, 12, 14-16 and 18 would be pending in this application. No new matter has been added by this amendment.

The applicants request entry of these amendments because they simplify matters for appeal (subject matter of claim 2 has been entered into claim 1; claims 8-10 (directed to a storing solution) has been cancelled; claim 13 has been cancelled because it would be duplicative in light of amended claim 1; claim 17 has been cancelled and the dependency of claims 14 and 18 has been amended in light of the cancellation of claims 13 and 17, respectively. *See MPEP 714.12(b)*. In addition, no new issues or search is required as the scope of the claims would be narrower than the scope of the claims previously examined. *See MPEP 904.02*.

It is submitted that the claims, herewith and as originally presented, are patentably distinct over the prior art cited in the Office Action, and that these claims were in full compliance with the requirements of 35 U.S.C. § 112. The amendments of the claims, as presented herein, are not made for purposes of patentability within the meaning of 35 U.S.C. §§§§ 101, 102, 103 or 112. Rather, these amendments and additions are made simply for clarification and to round out the scope of protection to which Applicants are entitled.

### **II. THE 35 U.S.C. 112, 2<sup>nd</sup> PARAGRAPH REJECTION HAS BEEN OVERCOME**

Claims 10 and 17 were rejected as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regards as the invention. This rejection has been rendered moot by the cancellation of claims 10 and 17. Applicants reserve the right to pursue these claims as previously filed in a continuing application.

### **III. THE 35 U.S.C. 102(b) REJECTION HAS BEEN OVERCOME**

Claims 8 and 9 were rejected as allegedly being anticipated by Dobrozsi et al. (US 6,503,955 -“Dobrozsi”). This rejection has been rendered moot by the cancellation of claims 8 and 9. Applicants reserve the right to pursue these claims as previously filed in a continuing application.

#### **IV. THE 35 U.S.C. 103(a) REJECTION HAS BEEN OVERCOME**

##### **A. The Uno and Wichterle rejections**

1. Claims 1, 3 and 5 were rejected as allegedly being obvious by Uno et al. (JP 10-197831 -“**Uno**”) in view of Wichterle et al. (US 3,220,960 -“**Wichterle**”).

2. Claims 1 and 4 were rejected as allegedly being obvious by **Uno** in view of **Wichterle** as applied to claims 1, 3 and 5 above and further in view of Ohmura et al. (US 4,604,425 -“Ohmura”).

3. Claims 1, 2, 13 and 16 were rejected as allegedly being obvious by **Uno** in view of **Wichterle** as applied to claims 1, 3 and 5 above and further in view of Janda et al. (US 4,640,936 -“Janda”) and Andersson et al. (Contact Dermatitis 1999 41:254-259 -“Andersson”).

4. Claims 1, 2 and 13-15 were rejected as allegedly being obvious by **Uno** in view of **Wichterle**, Andersson, and Janda as applied to claims 1-2, 13 and 16 and in further view of Ohmura.

5. Claims 1, 2, 13 and 16-18 were rejected as allegedly being obvious by **Uno** in view of **Wichterle**, Andersson, and Janda as applied to claims 1-2, 13 and 16 and in further view of Kamishita et al. (US 4,983,386 - “Kamishita”).

As each of the rejections utilize Uno and Wichterle and reject at least claim 1, these rejections are addressed collectively below.

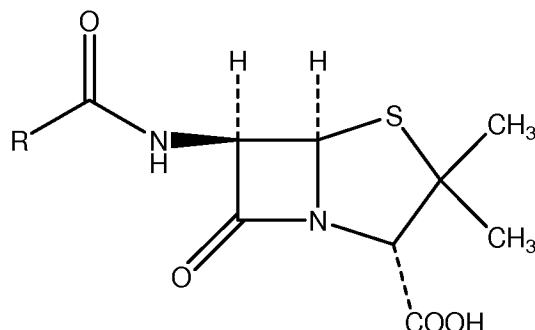
##### ***All elements not taught or suggested by Uno and Wichterle***

In order to establish a prima facie case of obviousness, all claim elements must be taught or suggested by either the reference cited or flow from knowledge which is well known to those of skill in the art. Even for the claim 1 without entry of the above amendments, the combination of Uno and Wichterle does not meet this standard.

##### ***Cationic group containing drug is not taught***

Uno is acknowledged as not teaching a lens containing a cationic group containing drug. Wichterle is relied for allegedly meeting this element of the invention, namely through the use of penicillin. Ignoring for the moment the impropriety of selectively using a single element from Wichterle to the exclusion of the remainder of its teaching, this position is factually incorrect as penicillin is not a cationic group containing drug.

Wichterle did not disclose the type of penicillin which was used, but all penicillins share at the least the following structural features:



with the differences residing in the nature of the R variable. As can be seen from the above structure, there is no cationic group.

Moreover, when considering Wichterle as a whole, there is no guidance which would have directed one of ordinary skill in the art toward a cationic containing drug as the teaching is generic for “...bacteriostatic, bacteriocidal or otherwise medicinally active substances such as antibiotics may be dissolved in the aqueous constituent of the hydrogels...” (see col. 1, lines 49-52).

Even if Wichterle had taught a compound which was a cationic containing drug and had taught this in the proper context of being present in an ophthalmic lens, determinations of obviousness still requires consideration of the references as a whole.

The monomers of used by Wichterle were compared against the applicants’ claimed invention, however, the real question is whether the monomers of Wichterle are similar to the monomers used by Uno as one of ordinary skill in the art does not have the applicants’ claims at their disposal as does the Examiner for categorization of the monomers, i.e. would one of ordinary skill in the art have recognized that the materials were “quite similar” as asserted in the Office Action.

Uno monomer mentioned in Office Action (classification made by Uno)	Wichterle monomers mentioned in Office Action
2-hydroxyethylmethacrylate (HEMA) (2-hydroxyethylmethacrylate or N-vinyl-2-pyrrolidone)	
2-hydroxy-3-methacryloyloxypropyl triammonium chloride (MAPTAC) (monomer having a quaternary	

<b>ammonium salt)</b>	
	acrylamide* ( $\text{CH}_2=\text{CHC}(\text{O})\text{NH}_2$ )
	ethylene glycol monomethacrylate ethylene glycol dimethacrylate
triethylene glycol dimethylacrylate <b>(monomer copolymerizable therewith)</b>	
mono-(2-acryloyloxyethyl) acid phosphate (MOAP) <b>(monomer having an anionic group selected from carboxyl group, sulfonic group and phosphoric group)</b>	

\* - unclear why this was cited as a representative example of Wichterle as this is not encompassed by Wichterle's claims nor does it appear to be part of their general teaching for the scope of their invention, i.e. Wichterle's crosslinked hydrophilic compounds appear to be formed by monomers of *esters* of acrylic or methacrylic acid; acrylamide meets neither of these categories

As can be seen from the above chart, one of ordinary skill in the art would see very little similarity between the co-polymer of Uno and the co-polymer of Wichterle.

Moreover, whereas Uno is directed to using their co-polymers to "provide a hydrous contact lens which is drastically lessened in the integration of a surface by the charges included in the protein, lipid, cell fragments and other wastes in lacrimal fluid." (see Abstract), Wichterle is only concerned with making elastic, soft, transparent hydrogels (see col. 1, line 59) and having excellent resistance to chemical attack, e.g. hydrolyzation by water (see col. 2, lines 59-62), i.e. there is no reasonable expectation of success that taking an isolated element from the teaching of Wichterle and inserting it into the teaching of Uno would still result in Uno's intended contact lenses especially when the constituent of the respective co-polymers and the intended use of those co-polymers are so different.

As neither of the Ohmura, Janda, Andersson and Kamishita references adequately addresses this deficiency of the combination of Uno and Wichterle, claims 1-5 and 13-18 (or claims 1, 3-5, 14-16 and 18 upon entry of the amendment) are unobvious for this reason alone.

***Element of claim 2 is not obvious over Uno, Wichterle and Janda (now part of claim 1)***

Claim 2 as examined included the further requirement that the phosphate group containing methacrylates included the compound of formula (II) – which is 2-methacryloyloxyethyl phosphate (MOEP) – **AND** the compound of formula (III) – bis-(2-methacryloyloxyethyl hydrogen phosphate. However, neither Uno nor Wichterle disclose the use of the compound of formula (III).

While there is no limit for the total number of references that can be used to formulate an obviousness rejection, the requirement that these references be considered as a whole remains and the use of multiple references for claims with relatively few elements would tend to support a holding of non-obviousness.<sup>1</sup>

In the present case, the Andersson and Janda references are introduced to address the missing element of bis-(2-methacryloyloxyethyl hydrogen phosphate. However, when considering this reference as a whole, it is clear that Andersson and Janda are referring to the use of 2-methacryloyloxyethyl phosphate and the compound of formula (III) – bis-(2-methacryloyloxyethyl hydrogen phosphate is as part of an *adhesion promoting dental composition (dental adhesive)* which is completely unrelated to Uno's hydrogous contact lenses or Wichterle's crosslinked hydrogels. Moreover, the bis-(2-methacryloyloxyethyl hydrogen phosphate is only one component of the adhesive; the adhesive further contains a photopolymerization catalyst comprising camphor quinine and amine, in acetone.

One of ordinary skill in the art would not have looked to specific components from a dental adhesive composition for means of modifying a contact lens and/or hydrogel and as such there was no reason to combine the teachings of Anderson and Janda with Uno and Wichterle.

As neither of the Ohmura, Andersson and Kamishita references adequately addresses this deficiency of the combination of Uno, Wichterle and Janda, claim 2 (or claims 1, 3-5, 14-16 and 18 upon entry of the amendment) are unobvious for this reason alone.

***Element of claim 16 is not obvious over Uno, Wichterle, Andersson and Janda***

Claim 16 incorporates wt % amounts for the compounds of structural formula (II) and (III). As it was noted above that there would be no reason to find for the incorporation of bis-(2-methacryloyloxyethyl hydrogen phosphate from Andersson and Janda into the combination of Uno and Wichterle, likewise there would be no reason to arrive at the wt % amounts for the compounds of structural formula (III).

MPEP 2144.05 section II (Optimization of Ranges) states that “A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable

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<sup>1</sup> For example, the use of five different references might be necessary for a composition combining 20 different compounds in order to establish obviousness, whereas similar use for a composition with 2 different compounds

might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977).” With regard to the assertion of obviousness via routine experimentation, this only applies if the variable has been recognized as a results-effective variable which none of Uno, Wichterle, Andersson or Janda suggests.

## **B. The Sulc rejections**

1. Claims 6, 7 and 11 were rejected as allegedly being obvious by Sulc et al. (US 5,270,415 -“**Sulc**”) in view of Aiache et al. (US 6,713,080 - “Aiache”). The applicants request reconsideration of this rejection for the following reasons.

### ***Combination of Sulc and Aiche lacks teaching for anionic/cationic monomer ratio***

Upon further review of the specification of Sulc, it was discovered by the applicants that the examples cationic and anionic monomers recited in col. 2-3 of Sulc were erroneously categorized, i.e. the anionic monomers were presented as cationic monomers whereas the cationic monomers were presented as anionic monomers. For example, acrylic acid or methacrylic acid (MAA) is mentioned as a cationic monomer (see col. 2, lines 66-67) whereas the quaternary ammonium compounds is included as being anionic monomers (see col. 3, lines 10-17).

However, acrylic acid and methacrylic acid is an anionic monomer in general as was mentioned on page 12, line 10 of the specification. (see also U.S. Patent 3,968,037 for examples of cationic monomers and U.S. Patent 5,013,456 for examples of anionic monomers and as further evidence of the state of the art with respect to the definition of cationic and anionic monomer).

When taking into account this error by Sulc, the molar ratio of the anionic monomer to the cationic monomer is not 92 mol.%, but 109 mol.% with regard to Example 17 of Sulc.

The value of 109 mol. % can be obtained by the following calculation where the MW of MAA is 86.06 and the MW of t-BAEMA is 185.3.

$$\begin{array}{l} \text{MAA (anionic monomer)/t-BAEMA (cationic monomer)} \times 100\% = \text{mol. \%} \\ (4.3 \text{ g}/86.06 \text{ g/mol}) \quad / (8.46 \text{ g}/185.3 \text{ g/mol}) \quad \times 100\% = \mathbf{109 \text{ mol. \%}} \end{array}$$

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suggests non-obviousness.

Therefore, Example 17 of Sulc not only does not teach the anionic monomer to cationic monomer ratio of claim 6, but the difference between 109% and 90% (or 80% as in claim 11) as claimed by the applicants is so great as to not be a routine modification via experimentation.

***No reason to optimize anionic/cationic ratio to claimed levels***

The applicants also maintain their previous position that there was no direction to suggest that this parameter was to be optimized; the only direction came from the necessity of the Office Action to account for this difference which would not have existed to one of ordinary skill in the art who does not have the applicants' claims before them as does the Examiner.

Furthermore, Sulc refers to cationic-anionic pairs which are employed in the polymerization of a balanced charge polymer of their invention is made up of substantially equimolar amounts of an ethylenically unsaturated cationic monomer and an ethylenically unsaturated anionic monomer (see col. 2, lines 51-59) in order to provide a hydrophilic contact lens exhibiting a significantly reduced tendency to accumulate proteinaceous materials, etc. upon its surface (see col. 2, lines 41-47).

Based on the disclosure of Sulc, at best one of ordinary skill would adjust the molar ratio of the anionic monomer to the cationic monomer to 1:1 in order to achieve the desired lack of debris retention on the lens surface. Therefore, the claimed molar ratio of the anionic monomer to the cationic monomer is not obvious to one of ordinary skill over Sulc.

Aiache is only relied upon for a generic teaching of drug delivery from an ophthalmic lens and the inclusion of an anionic group containing drug and does not remedy the deficiencies of the Sulc reference.

Therefore, claims 6, 7 and 11 are unobvious over Sulc and Aiache as the combination of references fail to teach or suggest all elements of the applicants' claimed invention.

2. Claims 6, 11 and 12 were rejected as allegedly being obvious by **Sulc** in view of Aiache as applied to claims 6, 7 and 11 above and in further view of Kato et al. (US 5,945,121 - "Kato"). The applicants request reconsideration of this rejection for the reasons set forth above for Sulc and Aiache for claims 6, 7 and 11.

In addition, with respect to the Kato reference, again this reference must be considered as a whole with the teachings of Sulc and Aiache. Kato refers to the formation of liposomes for the

treatment of dry eye. The liposomes are unrelated to the contact lenses of the applicant's claimed invention or Sulc and do not contain polymers which are related to either the applicants' claimed invention or even that of Sulc.

Moreover, the reference to sodium azulene sulfonate is within a list of non-essential ingredients cited by Kato (see col. 2, lines 6-33) and furthermore, these non-essential components are used with the liposome in the context of treating dry eye, i.e. for the rapid release of the non-essential component whereas Sulc mentions no release rate of active substances at all.

In contrast, the active ingredient within the claimed drug delivery ophthalmic lens achieves a much slower and controlled release rate of the active ingredient (see Example 7).

Therefore, claims 6, 11 and 12 are unobvious over Sulc, Aiache and Kato as the combination of references fail to teach or suggest all elements of the applicants' claimed invention.

### **C. The Dow rejection**

Claims 8 and 10 were rejected as allegedly being obvious by Dow et al. (US 6,589,922 - "Dow") in view of Schultz et al. (US 6,534,687 - "Schultz"). This rejection has been rendered moot by the cancellation of claims 8 and 10. Applicants reserve the right to pursue these claims as previously filed in a continuing application.



**CONCLUSION**

In view of the remarks and amendments herewith, the application is believed to be in condition for allowance. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are earnestly solicited. The undersigned looks forward to hearing favorably from the Examiner at an early date, and, the Examiner is invited to telephonically contact the undersigned to advance prosecution.

Respectfully submitted,  
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